

DFI 202: INTRODUCTION TO FINANCE

QUESTION ONE

Kombo Manufacturing Company is considering the purchase of a new machine for sh 250,000 that will reduce manufacturing costs by sh 90,000 annually. The company will use the straight line depreciation method, and it expects to sell the machine at the end of its 5 year operating life for sh 23,000. The firm will need to increase net operating working capital by Sh 25,000 when the machine is installed, but required operating working capital will return to the original level when the machine is sold after 5 years. The company's marginal tax rate is 30 percent, and it uses a 10 percent cost of capital to evaluate projects of this nature.

- What is the project's NPV?
- Assume the firm is unsure about the savings to operating costs that will occur with the new machine's acquisition. Management believes these savings may deviate from their base-case value (Sh 90,000) by as much as plus or minus 20 percent. What is the NPV of the project under both situations?
- Suppose the firm's chief financial officer suggests that the firm do a scenario analysis for this project because of concerns raised about data assumptions, particularly the operating cost savings, the new machine's salvage value, and the net operating working capital (NOWC) requirement. After an extensive analysis, she arrives with the following probabilities and values for the scenario analysis.

SCENARIO	PROBABILITY	COST SAVINGS	SALVAGE VALUE	NOWC
Worst case	0.35	Sh 72,000	Sh 18,000	Sh 30,000
Base Case	0.35	90,000	23,000	25,000
Best case	0.30	108,000	28,000	20,000

What are the project's expected net present value, its standard deviation, and its coefficient of variation?

QUESTION TWO

You have been asked by the General manager of your company to evaluate the proposed acquisition of an equipment for the firm's R & D department. The equipment's base price is Sh140,000 and it would cost another Sh30,000 to modify it for special use by your firm. The equipment which is depreciated using a straight line method, would be sold after 3 years for sh 60,000. Use of the equipment would require

an increase in net operating working capital (spare parts inventory) of sh 8,000. The equipment would have no effect on revenues, but it is expected to save the firm sh 50,000 per year in before-tax operating costs, mainly labor. The firm's marginal is 30 percent.

- a. What is the net cost of the equipment?
- b. What are the net operating cash flows in years 1, 2, and 3?
- c. What is the terminal cash flow?
- d. If the project's cost of capital is 12 percent, should the spectrometer be purchased?

QUESTION THREE

The Melo Company is evaluating the proposed acquisition of a new milling machine. The machine's base price is sh 108,000, and it would cost another sh 12,500 to modify it for special use by your firm. The machine which will be depreciated using a straight line method would be sold after 3 years for sh 65,000. The machine would require an increase in net operating working capital (inventory) of sh 5,500. The milling machine would have no effect on revenues, but it is expected to save the firm sh 44,000 per year in before tax operating costs, mainly labor. Harris's marginal tax rate is 30 percent.

- a. What is the net cost of the machine for capital budgeting purposes?
- b. What are the net operating cash flows in years 1, 2 and 3?
- c. What is the terminal cash flow?
- d. If the project's cost of capital is 12 percent, should the machine be purchased?

QUESTION FOUR:

Investors require a 15% rate of return on Kwega Company's common stock

REQUIRED:

- i) What is the stock value if the previous dividend was Sh 2 and if investors expect dividends to grow at a constant compounded annual rate of -5%, 0%, 5% and 10%
- ii) What is the constant growth model value for the stock if the required return is 15% and the expected growth rate is 15% or 20%? Are these reasonable results? Explain.



UNIVERSITY OF NAIROBI

MODULE II DEGREE PROGRAMME 2005/2006

SECOND YEAR EXAMINATIONS FOR THE DEGREE OF BACHELOR OF
COMMERCE

DFI 202: INTRODUCTION TO FINANCE

DATE: 9TH DECEMBER 2006

TIME: 2.00 P.M. - 4.00 P.M.

INSTRUCTIONS

1. Answer all questions. Marks allocated are shown at the end question
2. Be neat and concise. Show necessary workings.
3. Time allowed: 2 hours

QUESTION ONE

Mark Sang is considering giving up his paid employment and venturing into business on his own account. He is considering purchasing a quarry pit with a 'life' of 35 years. To purchase the quarry, Mark will have to pay Sh.2,375,000 now. Mark wishes to work the quarry for the next 20 years, which coincides with the remaining active life in paid employment. Mark earns Sh.250,000 per annum from his current job.

Mark predicts that the net operating cash receipts from the business (before any compensation to himself) will be Sh.625,000 per annum for the first 15 years and Sh.500,000 per annum for the last 5 years. He thinks that the business could be sold at the end of 20 years for Sh.750,000.

Further, Mark thinks that certain capital replacements and improvements would be necessary and this would amount to Sh.50,000 per annum for the first 5 years, Sh.75,000 per annum for the next 5 years, Sh.100,000 per annum for the next 7 years and nothing for the last 3 years. These expenditures are to be incurred at the **beginning** of each year.

To finance the purchase of the quarry pit, Mark would have to realize his savings which are invested to yield a rate of return of 10% before tax, and have a comparable risk factor to the Quarry business.

Required

- (a) Compute the net present value of the business and advice Mark on whether or not to buy the business (Ignore income tax). (9 marks)
- (b) Determine the internal rate of return of the business (10marks)
- (c) State and explain **three** strengths, and weaknesses of the payback method. (6 marks)

(Total: 25 marks)

QUESTION TWO

Urembo Fabrics Ltd. (UFL), an apparel manufacturer, is in the process of expanding its productive capacity to introduce a new line of products. Current plans call for a possible expenditure of Sh.1 billion on four projects of equal size (i.e. Sh.250 million), but with different returns.

Project A will increase the firm's processed yarn capacity and has an expected return of 15%.

Project B will increase capacity for woven fabrics and carries a return of 13.5%.

Project C is a venture into synthetic fibres and is expected to earn 11.2%.

Project D is an investment into dye and textile chemicals and is expected to show a 10.5% return.

The firm's capital structure consists of 40 percent debt and 60 percent common equity, and this will continue in the future.

UFL has Sh.150 million in retained earnings available for investment. The company's ordinary share is now selling at Sh.30 and underwriting expenses are estimated at Sh.3 per share if new shares are issued. Ordinary dividends for the next year will be Sh.1.50 per share, and earnings and dividends, which have grown consistently at 9%, are expected to maintain this growth rate in future.

The yield on comparative bonds has been hovering at 11%. The company's investment banker feels that the first Sh.200 million of bonds could be sold to yield 11% while additional debt might require a 2% premium.

Assume a corporate tax rate of 40%.

Required

- (a) Determine the break points in the firm's capital structure. (4 marks)
- (b) Calculate the marginal average cost of capital before and after each break point determined in (a) above. (6 marks)
- (c) Based on the information on the potential returns on the four projects and the marginal average cost of capital of the firm, determine the firm's optimal capital investment budget. (4 marks)
- (d) Depict your answer in (c) above by graphing the investment opportunity, and the weighted marginal cost of capital schedules on the same axes. (6 marks)
- (e) Give reason(s) why you would expect the effective cost of debt to be lower than the cost of equity (5 marks)

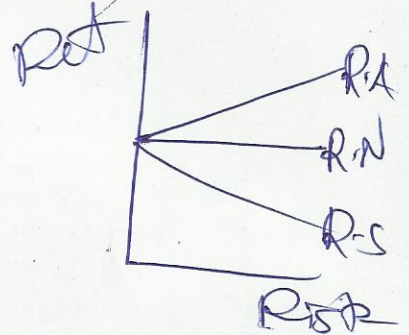
(Total: 25 marks)

QUESTION THREE

(a) In the context of portfolio theory, write brief notes on, and, graphically illustrate the following concepts: (1) risk-aversion (2) risk-seeking, and (3) risk neutral (9 marks)

(b) Mwekazaji Juma is considering building a portfolio containing two assets, M and J. Asset M will represent 40% of the value of the portfolio and asset J will account for the remaining 60%. The expected returns over the next 5 years, 2006-2010, for each of the assets are shown below.

Year	Expected returns	
	Asset M	Asset J
2006	14%	20%
2007	14	18
2008	16	16
2009	17	14
2010	19	10



Required

- Calculate the expected value of portfolio returns over the five-year period. (6 marks)
- Calculate the standard deviation of expected portfolio returns over the five-year period. (10 marks)

(Total: 25 marks)

QUESTION FOUR

(a) The treasurer of MalyaMungu Enterprises Ltd has been facing challenges in managing the company's cash. Suggest to her five possible solutions to each of the following problems:

- Where to invest temporary idle cash balances. (5marks)
- How to accelerate the collection of cash from debtors. (5marks)

(b) At a recent symposium organized by the Institute of Certified Public Secretaries, one of the participants presented a paper that highlighted benefits that accrue to a business when it sells on credit. Your managing director attended the symposium and was so impressed by the presentation that she immediately initiated a thorough review of your company's credit system. The review revealed the following relevant information.

- Annual sales of the company are Sh.50 million
- Credit sales are 25% of all sales
- Bad debts average 2% of all credit sales
- Average collection period is 40 days
- The company's cost of capital is 14% per annum
- The contribution margin on sales is 25%

Based on the above facts she is recommending a revamping of the credit policy of the company. The expected outcome of this action will be:

- Increase in total sales by 30%
- Credit sales will be 40% of all sales
- Average collection period would decrease to 35 days
- Bad-debts will increase to 3% of credit sales
- An additional part-time credit assistant will be hired for Sh.500,000 per annum.

Required

Assess the net-benefits of the proposed revamping of your company's credit policy.

(15 marks)

(Total: 25marks)



UNIVERSITY OF NAIROBI

MODULE II DEGREE PROGRAMME 2007/2008

SECOND YEAR EXAMINATIONS FOR THE DEGREE OF BACHELOR OF COMMERCE

DFI 202: INTRODUCTION TO FINANCE

DATE: 17 MAY, 2008

TIME: 2.00 P.M. – 4.00 P.M.

Instructions

1. Answer all questions. Marks allocated are shown at the end of the question.
2. Be neat and concise and show all necessary workings
3. Time allowed : 2 hours.

QUESTION ONE

The summarized financial statistics for the last six years of Commerce International Corporation are given below:

	2007	2006	2005	2004	2003	2002
1. Earnings per share (sh.)	4.70	4.80	4.60	4.70	4.60	4.70
2. Dividend per share (Sh.)	1.50	1.20	0.90	0.80	.50	.20
3. Dividend payout ratio (%)	32	25	19.6	17	10.9	4.3
4. Bonus	-	-	1:2	-	-	-
5. Market price per share (Sh.)	80	60	85	50	65	90
6. Stock turnover ratio (times)	5	6	8	8	9	12

Required:

- (a) Explain the meaning of each of the six terms in the table above and comment on the trends exhibited by the financial statistics. (9 marks)
 - (b) Compute the following ratios for the company over the six years:
 - (i) Price to Earnings ratio (2marks)
 - (ii) Dividend yield (3marks)
 - (iii) Retention ratio (2marks)
 - (iv) Average age of stocks (assume a 360-day year). (3marks)
 - (c) Explain any three limitations of using financial ratios (6marks)
- (Total: 25 marks)

D
 Dividend Payout Rate
 EPS

QUESTION TWO

(a) You are the chairperson of the investment retirement fund for Actors Guild. You are asked to set up a fund of semi-annual payments to be compounded semi-annually to accumulate a sum of Sh.5, 000,000 after 10 years at 8% annual rate (20 payments). The first payment into the fund is to take place 6 months from now, and the last payment is to take place at the end of the tenth year. - 1.5 monthly due

- (i) Determine how much the semi-annual payment should be. (5marks)

On the day after the sixth payment is made (the beginning of the fourth year), the interest rate goes up to 10% annual rate, and you can earn 10% on the funds that have accumulated as well as on all future payments into the fund. Interest is to be compounded semi-annually on all funds.

- (ii) Determine how much the revised semi-annual payments should be after this rate change (There are 14 semi-annual payments remaining the next payment will be in the middle of the fourth year). (7marks)

(b) Ahmed Malik just closed a Sh.6, 000,000 business loan that is to be repaid in 5 equal end-of year repayments. The interest rate on the loan is 10%.

- (i) Prepare an amortization schedule for the loan. (10marks)
(ii) Briefly explain why the interest component in each year's repayment decreases with time. (3marks)

interest *Principle* *End of the period*
at the start of the year *at the end of the year* *at the end of the year*

(Total: 25marks)

QUESTION THREE

The financial manager of Maulidi Industries Limited is worried about the high collection costs and the fact that strict collection policies are driving away customers. He is contemplating relaxing the collection effort in a bid to attract new customers and cut costs. The credit department has provided the following relevant information:

1. Credit sales will increase by 10% to Sh. 330million, the increase all coming from new customers.
2. Collection sales per shilling of sales will fall from Shs. 0.10 to Shs. 0.05.
3. Bad debt losses on sales to new customers will be at 5%. The company's current bad debt loss rate is 2% and is expected to remain unchanged for sales to the old customers with the changed collection policies.
4. Inventory turnover would increase from 6 to 8 per annum, while the average collection period for debtors should rise from 30 to 60 days.
5. The annual cost of carrying Shs. 1 of merchandise in inventory is 25 cents, while the cost of carrying Shs. 1 of receivables is 20 cents. These costs will remain at these rates even after change in policies.
6. Working capital (in addition to debtors and inventory) is normally 10% of sales and is expected to remain unchanged. The applicable cost of funds tied up is 12%
7. The gross margin ratio is 20%.

Required:

By employing an incremental analysis, evaluate the envisaged change in collection policies (assume a year of 360 days). (25marks)

QUESTION FOUR

Each year the Mobitelea Company empties 600,000 litres of sulphurous waste chemicals into the Nzoia River. These chemicals are a by-product in the manufacture of chemicals used in the purification of water supplies for a food processing plant.

A new technique has been invented for the recovery of sulphur from these waste chemicals. While the recovered sulphur is of relatively low quality, it can be sold to processors at a contribution margin of Sh. 1 per litre of waste chemicals i.e. after all direct costs but before depreciation on the recovery equipment and taxes. The recovery plant and equipment will cost Sh. 2,000,000 and has an economic life of ten years. Salvage value at this time will be virtually zero.

The company uses the straight line method of depreciation and a pay back period benchmark of 6 years for analyzing investment projects, and also assumes an average tax rate of 30%. Its required rate of return is 20%.

Required

- (a) Calculate the investment's net present value. (6marks)
- (b) Calculate the project's internal rate of return. (6marks)
- (c) Calculate the pay back period for the project. (4marks)
- (d) Should the company make the investment? Explain. (4marks)
- (e) What other factors should the company take into consideration before making the final decision? (5marks)

(Total: 25marks)